## REMARKS

Claims 1 – 19 and 21 are pending. The Examiner withdrew claims 1 and 3 – 17 from consideration. No amendments are made.

### *Claim Rejections - 35 USC* § 103

The Action rejects claims 2 and 18 – 21 as obvious over four different combinations of cited prior art references:

1) Farah (U.S. patent No. 4,912,049) in view of Greene (U.S. patent No. 3,281,951);

2) Farah in view of Beaupre (U.S. patent No. 4,995,888);

3) Iguchi (JP408035155) in view of Greene; and

4) Iguchi in view of Beaupre.

Claim 2 recites:

A process for obtaining a cellulosic membrane comprising:

a) heating *a solution containing 0.2 to 12% of glucose mass and 0.1 to 7% of yeast extract in water* that was filtered through sand and activated charcoal in a sanitary stainless steel mixer with a steam heated jacket at a temperature of 125$^{0}$C for 15 minutes, for sterilization purposes;

b) cooling the solution till it reaches a temperature between 5 and 30$^{0}$C;

c) *adding 0.5 to 5% of ethanol and 2 to 50% of an inoculum of Acetobacter xylinum*, followed by agitation of the solution until it is homogenized;

d) transferring the solution to *covered fermentation trays* and allowing the solution to rest for 16 to 240 hours, at a temperature between 5 and 30°C;

e) collecting cellulose wet sheets that are thus formed, varying from 0.25 to 200 mm in thickness; and

f) forwarding the cellulose wet sheets to a whirlpool tank where they are *purified and whitened according to the following sequence: rinsing, washing with sodium hydroxide 1 to 5%, rinsing, washing with 1 to 5% sodium lauryl sulfate and final rinsing*; wherein the cellulosic wet sheet is permeable to gases and impermeable to liquids;

g) in one extremity of the wet sheet, applying two rectangles of an absorbent material by pressure, a first of the two rectangles of absorbent material applied to a first side of the wet sheet and a second of the two rectangles of absorbent material applied to a second side of the wet sheet so as to obtain a semi-rigid end that will not adhere to the drying material;

h) inserting the extremity in drying equipment through an idling roller and introducing the extremity between two pairs of draining cylinders, and from there to a pair of conveyor belts, pressing the wet sheet between these belts with increasing force (from 0.5 to 8 $kgf/cm^2$) applied by a series of spaced apart small rollers heated by hot water that circulates in the small roller axles; and passing the wet sheet to a pair of finishing cylinders, which may or may not be heated to create a smooth surface for the membrane;

i) forwarding the membrane formed by the drying of the wet sheet to a coiling device where the product is coiled.

Underline and italic emphasis added. Applicant submits that the prior art refrences cited do not teach or suggest the underlined and italicized elements listed above in claim 2.

Applicant is not claiming "bacterial cellulose." Instead, claim 2 recites a process of obtaining bacterial cellulose. The process may be used to:

> A. Provide bacterial cellulose blankets with consistent quality and productivity, which may be competitive in the market, with controlled quality, and may also be used in life science products; and
>
> B. Provide bacterial cellulose dry membranes that are produced in industrial scale, which are permeable to gasses but impermeable to liquids.

But as shown in the enclosed paper by Dr. Malcolm Brown, processes such as these were not known and could not be achieved in the art.

The recited process is distinguishable from existing drying methods, such as Farah's "dehydration in a distended state." Farah, abstract. The Farah process renders the pellicle a "liquid gas permeable cellulose film." See, for Example, Farah, claim 1. Furthermore, Farah uses tea as culture medium.

In contrast, claim 2 recites a different medium, which substantially improves the yield of the fermentation. In addition, the process recited in claim 2 allows the membrane to breath but may retain liquids. This may be important in the treatment of second degree burn. The membrane may breathe but may not allow

the loss of the liquids of the burned body, which is one of the main causes of death in extensive burns.

The objective taught in Iguchi is to produce a molding material for specific use. The objective was mainly to provide the Manabu Koriki intensity raw material or to provide molding material of tensile strength as a raw material in the Manabu Koriki intensity field. And Iguchi only generally describes bacterial cellulose fermentation. The present application describes a process that may be used to produce bacterial cellulose in industrial scale, with consistent quality, permeability to gases and impermeability to liquids. As set forth above, Iguchi relates to the production of single sheets of bacterial cellulose and has no connection whatsoever with the process recited in claim 2.

Greene teaches many roll dryers, for example in the paper industry, which resulted in many different patents. The most used dryers were studied and tested. The inventors came to the conclusion that they could not be used to obtain the desired product, because they had not been designed to comply with the necessary parameters of the bacterial cellulose blankets, such as pressure and tensile strength in order not to ruin the blanket and, at the same time, to allow the resulting dry membrane to maintain its main characteristics.

Applicant incorporates its previous reply herein. As stated in the previous reply, Greene does not to teach "a pair of conveyor belts, pressing the wet sheet

between these belts with increasing force (from 0.5 to 8 kgf/cm$^2$) applied by a series of spaced apart small rollers heated by hot water," as recited in claim 2. And Greene teaches away from the process recited in claim 2 by teaching that such a configuration is impracticable. One of ordinary skill in the art would not arrive at the recited process by a combination of any one or more of Farah, Iguchi, and Greene. Further, Green specifically teaches away from the recited process.

In addition, Applicant submits that the technology taught by Greene cannot dry bacterial cellulose blankets because, as described in Iguchi, paragraph [0023] it is important to avoid drying at temperatures where the cellulose can degrade. Paragraph [0023] in the process described. Iguchi concludes paragraph [0023] by teaching freeze-drying or critical point desiccation: "...Therefore, it is more desirable to use methods, such as freeze-drying and critical point desiccation, to prevent [degradation] and use it taking advantage of a detailed fibrous gestalt." Iguchi specifically teaches away from using the process taught by Greene, regardless of whether the base process modified was taught in Iguchi or Farah. Further, Applicant submits that none of the cited prior art references teach a process that results in changing the porosity of the bacterial cellulose membrane.

The Action cites Beaupre in its new grounds of rejection. Beaupre mentions various celluloses that are permeable to gases and impermeable to liquids, but none of those materials are bacterial cellulose membranes. The materials described in

Beaupre would not lead one of ordinary skill in the art to modify the processes of Farah, Iguchi, or Greene.

In contrast to the membranes taught in Beaupre, bacterial cellulose membranes have the properties mentioned above. In addition, bacterial cellulose membranes do not disintegrate when immersed in water for more than 5 minutes, and also show a substantial increase in tensile strength (more than 10 times). These properties may be an important factor if the product was applied to wet wounds.

Beaupre simply does not teach a process of making bacterial cellulosic membrane. Instead, Beaupre teaches using various celluloses to separate liquid and gas phases. Because Beaupre fails in this regard, it cannot overcome the deficiencies of any one of Farah, Iguchi, or Greene when taken alone or in any combination. One of ordinary skill in the art would not look to Beaupre to modify the teachings in Farah, Iguchi, or Greene.

Applicant also submits that all 10 claims of Beaupre are of a "method of separating a charge rich liquid...," which has no bearing on the process recited in claim 2. Moreover, Beaupre's patent specifies some kinds of cellulose membranes – cellulose acetate membrane, hydrolyzed cellulose membrane, polyethyleneimine membrane and polytetrafluoroethylene membrane – that have nothing to do with bacterial cellulosic membranes. The "logical argument" used in the Action is too

attenuated. According to the Action, 4 (four) different documents must be combined to achieve the result of the invention. In a careful review, Applicant submits that the cited prior references fail to teach at least the following elements of claim 2:

a) heating a solution containing 0.2 to 12% of glucose mass and 0.1 to 7% of yeast extract in water that was filtered through sand and activated charcoal in a sanitary stainless steel mixer with a steam heated jacket at a temperature of 125°C for 15 minutes, for sterilization purposes;

> ...
> c) adding 0.5 to 5% of ethanol and 2 to 50% of an inoculum of Acetobacter xylinum, followed by agitation of the solution until it is homogenized;
>
> d) transferring the solution to covered fermentation trays and allowing the solution to rest for 16 to 240 hours, at a temperature between 5 and 30°C;
> ...
> f) forwarding the cellulose wet sheets to a whirlpool tank where they are purified and whitened according to the following sequence: rinsing, washing with sodium hydroxide 1 to 5%, rinsing, washing with 1 to 5% sodium lauryl sulfate and final rinsing; wherein the cellulosic wet sheet is permeable to gases and impermeable to liquids;

Applicant also respectfully submits that the broad reading of the prior art references cited in the Action appears to state that the existence of bacterial cellulosic membranes renders any process to making said membranes unpatentable. But Applicant also submits that the process recited in claim 2 is not the process

used by the bacteria themselves. Nor is it the process taught by the combinations of prior art references cite above.

Based on the foregoing, Applicant believes that the rejection of claim 2 is improper. Claims 18, 19, and 21 depend from and include all of the elements of claim 2. Applicant believes that the rejection of these dependent claims is also improper for at least the reasons set forth above.

Applicant request withdrawal of the 35 U.S.C. § 103 rejections of claims 2, 18, 19, and 21.

***Conclusion***

If the Examiner believes that any additional matters need to be addressed in order to place this application in condition for allowance, or that a telephone interview will help to advance the prosecution of this application, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

In view of the foregoing remarks, Applicant respectfully submits that the present application is in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,

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Enclosure